

Faraday's Researches

Still there were great variations in degree; thus silver in weak

iron was very positive to silver in weak acid.

in strong and weak nitric acid. —

Here the

Ree of change produced by difference in the strength of the acid was so great as to cause not merely difference in degree,

the order of the metals, of the most striking

Nature. Thus iron and silver being in tube No. 2 (962), which-

ever metal was in the weak acid was positive to the other in the strong acid. It was merely requisite to raise the one and lower the other metal to make either positive

at pleasure (963). Copper in weak acid was positive to silver, lead, or tin in strong acid. Iron in weak acid was positive to silver, copper, lead, zinc, or tin in strong acid. Lead in weak acid was positive to copper, tin, cadmium, zinc, and iron in strong acid.

Silver in weak acid was positive to iron, lead, copper, and, though slightly, even to tin in strong acid. Tin in weak acid was positive to copper, lead, iron, zinc, and silver, and either neutral or a little positive to cadmium in strong acid. Cadmium in weak acid is very positive, as might be expected, to silver, copper, lead, iron, and tin, and moderately so, to zinc in the strong acid. When cadmium is in the strong acid it is slightly positive to silver, copper, and iron in weak acid. Zinc in weak acid is very positive to silver, copper, lead, iron, tin, and cadmium in strong acid: when in the strong acid it is a little positive to silver and copper in weak acid.

985. Thus wonderful changes occur amongst the metals in circuits containing this acid, merely by the effect of dilution;

so that of the five metals, silver, copper, iron, lead, and tin, any one of them can be made either positive or negative to any other, with the exception of silver positive to copper. The order of these five metals only may therefore be varied about one hundred different ways in the same acid, merely by the effect of dilution.

986. So also zinc, tin, cadmium, and lead; and likewise zinc, tin, iron, and lead, being groups each of

four metals; any one of these metals may be made either positive or negative to any other metal of the same group, by dilution of this acid.

987. But the case of variation by dilution may, as regards the